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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/810,466	03/19/2001	Iichirou Inoue	3693-18	8980

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EXAMINER	
SCHECHTER, ANDREW M	

ART UNIT	PAPER NUMBER
2871	

DATE MAILED: 09/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/810,466	INOUE ET AL.	
	Examiner	Art Unit	
	Andrew Schechter	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 June 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *61-99,101-112,114-122,124-129 and 132-140* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *61-65,67-70,76-83,85-89,94-99,102-112,115-122,125-129,132-134 and 136-140* is/are rejected.

7)☒ Claim(s) *66,71-75,84,90-93,101,114,124 and 135* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *4/16/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 17 June 2004 has been entered.

Response to Arguments

2. Applicant's arguments filed 17 June 2004 have been fully considered but they are not persuasive.

The applicant argues [p. 22] that *Etori's* teaching of a haze value of at least 15 is not relevant to the amended claims since the teaching in *Etori* focuses on reflective type LCDs. The examiner agrees that *Etori* does not provide a clear teaching for the haze value of an anti-glare layer in a transmissive (back-lit) type LCD. *Murata* does provide a clear teaching for the haze value of an anti-glare layer in a transmissive (back-lit) type LCD, so it is relied on below in place of *Etori*. Otherwise, the following rejections are roughly analogous to the rejections in the previous office action.

Claim Objections

3. Applicant is advised that should claims 71 and 90 be found allowable, claims 66 and 84, respectively, will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 121, 122, and 140 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Fujisawa et al.*, U.S. Patent No. 6,002,464 in view of *Yamahara et al.*, U.S. Patent No. 5,844,649 in view of *Murata et al.*, U.S. Patent No. 6,074,741.

Fujisawa discloses a liquid crystal display device comprising a liquid crystal cell [23], a pair of polarizers [24], a backlight [22], an antiglare film [2, 3] provided on the viewer side of one of the polarizers, with an internal scattering layer [2] and a scattering surface [3], wherein the internal scattering layer includes a polymer matrix [resin, abstract] and dispersed particles [col. 3, lines 37-40], with a refractive difference which is significant to cause internal scattering [col. 3, lines 20-25].

Fujisawa does not explicitly disclose that the liquid crystal cell includes a pair of substrates and liquid crystal. This is either inherent, or if not, is taught by *Yamahara* for an analogous device. It would have been obvious to one of ordinary skill in the art at the time of the invention to have substrates and liquid crystal, motivated by the desire to have a way to contain the liquid crystal, mount electrodes, etc.

Fujisawa discloses the refractive index difference being from 0.01 to 0.12, overlapping the recited range in claim 122. In such cases, a *prima facie* case of obviousness exists [see MPEP 2144.05, in re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976)].

Fujisawa does not appear to disclose that the antiglare film has a haze value of equal to or greater than 15. *Murata* teaches that such an antiglare layer in a transmissive device with a backlight [see Fig. 3] should have a haze value of 3-30, to optimize glare-reduction and image contrast [col. 8, lines 48-65]. This overlaps the recited range, so a *prima facie* case of obviousness exists [see MPEP 2144.05, in re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976)].

Claim 121 is therefore unpatentable.

The antiglare film is made of a single layer or a multi-layer structure, so claim 122 is also unpatentable. The internal scattering layer and scattering surface of the antiglare film are defined in different layers, so claim 140 is also unpatentable.

6. Claims 61-65, 67-70, 76-83, 85-89, 121, 122, 125-129, 132, 133, 134, 136-139 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Yamahara et al.,* U.S.

Patent No. 5,844,649 in view of *Maekawa,* U.S. Patent No. 6,164,785 in view of *Jones et al.,* U.S. Patent No. 5,949,506 in view of *Murata et al.,* U.S. Patent No. 6,074,741.

Yamahara discloses [see Fig. 1, for instance] a liquid crystal cell [1] with substrates and liquid crystal, and a pair of polarizers [4 and 5]. It does not appear to explicitly disclose a backlight, but it is clearly a transmissive LCD; *Jones* does disclose a backlight and it would have been obvious to one of ordinary skill in the art at the time of the invention to use such a backlight in the device of *Yamahara*, motivated by the desire to provide a bright display.

Yamahara does not explicitly disclose an antiglare layer. *Maekawa* does disclose an antiglare layer [1] for use in an analogous device. The anti-glare layer [as discussed above, and see Fig. 1] has an internal scattering layer and a scattering surface, wherein the internal scattering layer includes a polymer matrix and particles dispersed therein [abstract]. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the antiglare layer of *Maekawa* on the viewer's side of the display device of *Yamahara,* motivated by *Maekawa's* teaching that it provides an antiglare film "which can maintain images clear and does not cause the scintillation of images" [see abstract] (and more simply, that it prevents glare as the name suggests when placed so).

Claim 121 also recites having a difference in refractive index between the particles and the polymer matrix to cause internal scattering. This could be taken as an inherent feature, since without the refractive index mismatch, there would be no anti-glare effect (which is there even if the anti-glaring layer were leveled so that there were

no surface scattering anti-glare effect [col. 6, lines 46ff.].) Alternatively, *Jones* discloses an analogous diffusing layer and teaches that the difference in refractive particles should be preferably from about 0.05-0.15 [col. 6, lines 20-41]. It would have been obvious to one of ordinary skill in the art at the time of the invention to use such a value, motivated by *Jones*'s teaching that this range "allows the beads or particles to transform the layer into a diffuser in an efficient and productive manner".

Maekawa discloses that the antiglare film is a single layer, but does not disclose the difference in refractive indices being between 0.03 and 0.10. *Jones'* range 0.05-0.15 overlaps with the claimed range; in such cases a *prima facie* case of obviousness exists [see MPEP 2144.05, in re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976).

The above references do not appear to disclose that the antiglare film has a haze value of equal to or greater than 15. *Murata* teaches that such an antiglare layer in a transmissive device with a backlight [see Fig. 3] should have a haze value of 3-30, to optimize glare-reduction and image contrast [col. 8, lines 48-65]. This overlaps the recited range, so a *prima facie* case of obviousness exists [see MPEP 2144.05, in re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976)].

Claims 121 and 122 are therefore unpatentable.

Also, the image clarity for *Maekawa's* anti-glare layer, measured using a 0.5 mm optical comb, is 59 [see Table 1], so claim 125 is unpatentable.

Yamahara discloses a twist orientation liquid crystal layer [TN], and the refractive index anisotropy is 0.092 [col. 7, line 42, this implicitly includes at 550 nm, the center of the visible light spectrum], so claims 126 and 127 are also unpatentable. *Yamahara*

discloses a phase compensation element between the cell and one of the polarizers [see Figs. 3 and 4], so claim 128 is also unpatentable. The phase compensation element comprises a discotic liquid crystal in an inclines or hybrid orientation [col. 7, lines 46-53], so claim 129 is also unpatentable. Claim 132 is analogous to claim 125, so claim 132 is also unpatentable. Claim 136 is analogous to claim 126, so it is also unpatentable.

Yamahara also discloses [col. 8, lines 13-24, see Fig. 3] the index ellipsoid with na, nb, and nc orthogonal, and that the phase compensation element has na=nc>nb, a-axis parallel to the plane, and b-axis inclined to the normal, so claims 133 and 134 are unpatentable. The b-zxis forms an angle between 15 and 75 degrees with the normal [col. 8, line 6] so claim 137 is unpatentable, and (na-nb)xd is between 80nm and 250nm [col. 8, lines 19-20], so claim 138 is unpatentable. Claim 139 is analogous to claim 127, so claim 139 is also unpatentable.

All the limitations of claims 61, 62, 64, 65, 67-70, 76, and 77 have been addressed above, so claims 61, 62, 64, 65, 67-70, 76, and 77 are unpatentable. Claim 63 recites the additional limitation that the liquid crystal is held in a matrix obtained by cross-linking an organic polymer, which is disclosed by *Yamahara* [col. 7, lines 50-53], so claim 63 is unpatentable. Claim 78 recites the additional limitation of first and second phase compensation elements on opposite sides of the liquid crystal layer, which is shown in *Yamahara*'s Fig. 4, so claim 78 is unpatentable.

All the limitations of claims 79, 81-83, and 85-89 have been addressed above, so claims 79, 81-83, and 85-89 are unpatentable. Claim 80 recites the additional limitation

that the direction corresponding to na is substantially parallel to the layer plane of the liquid crystal, which is disclosed by *Yamahara* in Fig. 3, so claim 80 is unpatentable.

7. Claims 94-97, 104-110, and 117-120 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Abileah* et al., U.S. Patent No. 5,629,784 in view of *Yamahara et al.,* U.S. Patent No. 5,844,649 in view of *Murata et al.,* U.S. Patent No. 6,074,741.

Abileah discloses a liquid crystal display device comprising a liquid crystal cell with substrates [5, 13], liquid crystal [9], a pair of polarizers [3, 15], a backlight (hence transmissive light) [2], an antiglare layer [21] provided on the viewer side of one of the polarizers, wherein the anti-glare layer suppresses coloration at a viewing angle of 50° and 60° [col. 18, lines 13-21: "...the maintaining of little or no color shifting in display as viewing angles increase is a highly desired result in the industry. This allows viewers at both normal and, for example, 60° to see substantially the same colors at particular points on the display panel... this display including BEF 17 and diffuser 21 maintained the uniformity of color over an extremely wide range of viewing angles"].

Abileah does not appear to explicitly disclose that the chromaticity (x,y) has $x \leq 0.3581$ and $y \leq 0.3675$ at 50° or $x \leq 0.3647$ and $y \leq 0.3650$ at 60° while at the same time a white image is displayed at a normal viewing angle. However, these claim limitations are simply a quantitative expression of the statement that the color remains uniformly white when viewed at 0° and at 50° or 60°, which *Abileah* does disclose. Chromaticity values outside these cited ranges fail to appear white: the applicant's specification states that the human eye can detect changes of 0.005 in the x or y values [p. 30], and the closest to white sample [Table 6] shows x=0.3512, y=0.3579. Thus chromaticities at

the edge of the recited ranges (x=0.3581 and y=0.3675 at 50° or x=0.3647 and y=0.3650 at 60°) will show a color shift from white to the human eye. Since *Abileah* discloses that uniformity of color is maintained, and uses the same diffuser/antiglare layer technology to accomplish this, there is substantial reason to believe that *Abileah*'s device satisfies the recited limitations.

Even assuming that it did not, it would have been obvious to one of ordinary skill in the art at the time of the invention to have it do so. *Abileah*'s statement that the "elimination of such color shifting is clearly a desired result in all modern AMLCDs" [col. 17, lines 50-51] indicates that the off-normal chromaticity is a result-effective variable whose optimization would have been obvious to one of ordinary skill in the art. *Abileah* indicates that using a diffuser [anti-glare layer] to maintain "the uniformity of color over an extremely wide range of viewing angles" [col. 18, lines 19-21] was known, so it would have been obvious to use this technique to decrease the off-normal color shift as much as possible, namely until it is within the recited range of chromaticities and the human eye cannot detect a color shift.

Abileah does not disclose a phase compensation element between the liquid crystal cell and one of the polarizers. *Yamahara* disclose a phase compensation element between the liquid crystal cell and one of the polarizers, and it would have been obvious to one of ordinary skill in the art at the time of the invention to use this compensation film in *Abileah*, motivated by *Yamahara's* teaching that "since biased optical characteristics are properly compensated, viewing-angle characteristics in the case of inclined viewing angles can be improved" [see abstract].

The above references do not appear to disclose that the antiglare film has a haze value of equal to or greater than 15. *Murata* teaches that such an antiglare layer in a transmissive device with a backlight [see Fig. 3] should have a haze value of 3-30, to optimize glare-reduction and image contrast [col. 8, lines 48-65]. This overlaps the recited range, so a *prima facie* case of obviousness exists [see MPEP 2144.05, in re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976)].

Claims 94, 95, and 108 are therefore unpatentable.

Yamahara's compensation plate satisfies the limitations of claims 96, 97, 104-106, 109, 110, and 117-119, so claims 96, 97, 104-106, 109, 110, and 117-119 are unpatentable.

The liquid crystal in *Abileah* is twisted nematic, so claims 107 and 120 are unpatentable.

8. Claims 98, 99, 102, 111, 112, and 115 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Abileah*, *Yamahara*, and *Murata* as applied to claims 94 and 108 above, and further in view of *Maekawa,* U.S. Patent No. 6,164,785.

Abileah does not explicitly disclose details of its diffusion (antiglare) layer. *Maekawa* does disclose a diffusion (anti-glare) layer which satisfies the limitations of claims 98, 99, 102, 111, 112, and 115. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the antiglare layer of *Maekawa*, motivated by *Maekawa's* teaching that it provides an antiglare film "which can maintain images clear and does not cause scintillation of images [see abstract] (and more simply,

that it prevents glare as the name suggests). Claims 98, 99, 102, 111, 112, and 115 are therefore unpatentable.

9. Claims 103 and 116 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Abileah*, *Yamahara*, and *Murata* as applied to claims 94 and 108, and further in view of *Yamahara et al.*, U.S. Patent No. 5,844,649.

Abileah does not disclose the value of the refractive index anisotropy for the liquid crystal. *Yamahara* discloses using liquid crystal which has anisotropy of 0.092 for an analogous device, and it would have been obvious to one of ordinary skill in the art at the time of the invention to use a liquid crystal having such an anisotropy, motivated by *Yamahara's* example of successfully using this value, particularly in combination with the compensation plate (which compensates for the liquid crystal's anisotropy) which is being combined with *Abileah*'s device. Claims 103 and 116 are therefore unpatentable.

Allowable Subject Matter

10. Claims 66, 71-75, 84, 90-93, 101, 114, 124, and 135 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

11. The following is a statement of reasons for the indication of allowable subject matter:

Claims 66, 71, 84, 90, 101, 114, 124, and 135 recite the additional limitation that the haze value of the antiglare layer is equal to or greater than 40. This is outside of the

range taught by *Murata* (relied on above), so the prior art does not disclose this additional limitation. Claims 66, 71, 84, 90, 101, 114, 124, and 135 would therefore be allowable if rewritten appropriately. Claims 72-75 depend on claim 71, and claims 91-93 depend on claim 90.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Schechter whose telephone number is (571) 272-2302. The examiner can normally be reached on Monday - Friday, 9:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H. Kim can be reached on (571) 272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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30 August 2004